UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,606	08/02/2001	Mats Dahlback	19378.0011	6441

7590 12/24/2003

Swidler Berlin Shereff Friedman
Suite 300
3000 K Street N W
Washington, DC 20007

EXAMINER	
WILKINS III, HARRY D	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 12/24/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/857,606	DAHLBACK ET AL.	
	Examiner	Art Unit	
	Harry D Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-15 and 17-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15 and 17-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 24 July 2003 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 13 and 17-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Mardon et al (US 5,023,048) as supported by Van Swam and Garde et al.

Mardon et al anticipate the invention as claimed. Mardon et al teach (see abstract) a Zr-alloy that contains 0.35-0.65 wt% Sn, 0.20-0.65 wt% Fe and 0.35-0.65 wt% Nb. This composition overlaps the presently claimed range at 0.65 wt% Sn, 0.3-0.6 wt% Fe and at 0.65 wt% Nb. See MPEP 2131.03. Regarding the presence of other elements in the composition of Mardon et al (oxygen), the present claim recites a

composition "comprising", which is defined as leaving the composition open to other elements, even in major amounts. See MPEP 2111.03.

Regarding claims 17 and 19, Mardon et al teach (see abstract and title) that the alloy is used as a fuel rod sheath in a nuclear reactor.

Regarding claims 18 and 20, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is part of a nuclear fuel assembly.

Regarding claims 21 and 24, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is a cladding (see Figure).

Regarding claims 22, 23, 25 and 26, Mardon et al teach (see col 2, lines 55-59) that the inner tubular layer (see Figure) is made of a Zr-alloy of conventional type. Conventional inner layers were made from pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloys possess less strength, and thus, less ductility, than the alloy of Mardon et al (for support see Garde et al '308 at col 4, lines 40-44).

Regarding claim 27, Mardon et al teach (see abstract) a Zr-alloy that contains 0.35-0.65 wt% Sn, 0.20-0.65 wt% Fe and 0.35-0.65 wt% Nb and that (see abstract and title) the alloy is used as a fuel rod sheath in a nuclear reactor, which is a component for a nuclear energy plant. Regarding that the composition is substantially uniform throughout, Mardon et al teach (see col. 3, lines 35-38) that the alloy has a homogenous structure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 13-15 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomoto et al (JP 08-067954) as supported by Van Swam and Garde et al.

Nomoto et al teach (see English abstract) a Zr-alloy that contains 0-1.0 wt% Nb, 0.4-1.7 wt% Sn and 0.25-0.75 wt% Fe. The range of Nb overlaps the presently claimed range at 0.65-1.0 wt%. The ranges of Sn and Fe taught by Nomoto et al are broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad ranges disclosed by Nomoto et al because Sn and Fe were known to affect the strength and corrosion resistance of the alloy (see paragraphs 14 and 15 of machine translation). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II.

Regarding claim 14, Nomoto et al teach (see English abstract) that the alloy contains 0-0.10 wt% Ni.

Regarding claim 15, Nomoto et al teach (see English abstract) that the alloy contains 0.05-0.30 wt% Cr.

Regarding claims 17-21 and 24, Nomoto et al teach (see paragraph 6 of machine translation) that the alloy is used as a nuclear fuel covering spool. This means that the alloy is used as a nuclear fuel rod cladding, which is part of a nuclear fuel assembly.

Regarding claims 22, 23, 25 and 26, Nomoto et al teach (see paragraph 6 of machine translation) that the alloy is used as a nuclear fuel covering spool (i.e.-fuel rod cladding). Conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloys possess less strength, and thus, less ductility, than the alloy of Nomoto et al (for support see Garde et al '308 at col 4, lines 40-44).

6. Claims 13-15 and 17-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anada et al (JP 02-159336) as supported by Nomoto et al, Van Swam and Garde et al.

Anada et al teach (see English abstract) a Zr-alloy that contains 0.05-1.5 wt% Nb, 0.2-1.7 wt% Sn and 0.05-0.50 wt% Fe. The ranges of Nb and Fe overlap the presently claimed range at 0.65-1.5 wt% and 0.3-0.5 wt%, respectively. The range of Sn taught by Anada et al is broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad range disclosed by Anada et al because Sn was known to affect the strength and corrosion resistance of the alloy (see paragraph 14 of machine translation of Nomoto et al (JP 08-067954)). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the

recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II. Though Anada et al fails to expressly teach that the alloy is used in a nuclear reactor, Anada et al do teach (see English abstract) that the alloy possesses corrosion resistance even in "reactor primary water". In other words, the alloy possesses corrosion resistance even when used in a nuclear reactor. Thus, Anada et al do teach using the alloy in an environment where it is subjected to increased radiation.

Regarding claim 14, Anada et al teach (see English abstract) that the alloy contains 0-0.10 wt% Ni.

Regarding claim 15, Anada et al teach (see English abstract) that the alloy contains 0.05-0.30 wt% Cr.

Regarding claims 17-21 and 24, the conventional use of the Zr-alloys is as a nuclear fuel cladding, which is part of a nuclear fuel assembly. Therefore, it would have been obvious to have made the alloy of Anada et al into a nuclear fuel cladding because it possessed corrosion resistance with respect to nuclear reactor cooling water.

Regarding claims 22, 23, 25 and 26, conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloys possess less strength, and thus, less ductility, than the alloy of Anada et al (for support see Garde et al '308 at col 4, lines 40-44).

Regarding claim 27, see above regarding claim 13 on discussion of the

obviousness of the claimed ranges. The conventional use of the Zr-alloys is as a nuclear fuel cladding, which is part of a nuclear fuel assembly. Therefore, it would have been obvious to have made the alloy of Anada et al into a nuclear fuel cladding because it possessed corrosion resistance with respect to nuclear reactor cooling water. Regarding that the composition is substantially uniform throughout, while Anada et al are silent as to the homogeneity of the alloy, one of ordinary skill in the art would have expected the alloy to be substantially homogenous because Anada et al do not teach that the composition is to be non-homogenous.

Regarding claim 28, Anada et al teach (see English abstract) that the alloy contains 0-0.10 wt% Ni and 0.05-0.30 wt% Cr.

7. Claims 13 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isobe et al (US 5,912,935) as supported by Van Swam and Garde et al.

Isobe et al teach (see abstract) a Zr-alloy that contains 0.6-2.0 wt% Nb, 0.5-1.5 wt% Sn and 0.05-0.3 wt% Fe. The range of Fe overlaps the presently claimed range at 0.30 wt%. The ranges of Nb and Sn taught by Isobe et al are broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad ranges disclosed by Isobe et al because Nb and Sn were known to affect the strength and corrosion resistance of the alloy (see paragraphs 14 and 18 of machine translation of Nomoto et al (JP 08-067954)). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955)

220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II.

Regarding claims 17-21 and 24, Isobe et al teach (see abstract) that the alloy is used as a nuclear fuel cladding tube, which is part of a nuclear fuel assembly.

Regarding claims 22, 23, 25 and 26, Isobe et al teach (see abstract) that the alloy is used as a nuclear fuel cladding tube. Conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloys possess less strength, and thus, less ductility, than the alloy of Isobe et al (for support see Garde et al '308 at col 4, lines 40-44).

8. Claims 13 and 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mardon et al (US 5,023,048) as supported by Van Swam and Garde et al..

The teachings of Mardon et al are described above in paragraph no. 9. The portion of the presently claimed range not taught by Mardon et al, more than 0.65 to 1.6 wt% Nb and more than 0.65 to 0.85 wt% Sn, would have been obvious to one of ordinary skill in the art because the prior art range is close enough, e.g.- 0.65 vs 0.651 wt% Nb that it would have been expected to have the same properties, see MPEP 2144.05.

Regarding claims 17 and 19, Mardon et al teach (see abstract and title) that the alloy is used as a fuel rod sheath in a nuclear reactor.

Regarding claims 18 and 20, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is part of a nuclear fuel assembly.

Regarding claims 21 and 24, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is a cladding (see Figure).

Regarding claims 22, 23, 25 and 26, Mardon et al teach (see col 2, lines 55-59) that the inner tubular layer (see Figure) is made of a Zr-alloy of conventional type. Conventional inner layers were made from pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloys possess less strength, and thus, less ductility, than the alloy of Mardon et al (for support see Garde et al '308 at col 4, lines 40-44).

Regarding claim 27, see above regarding the compositional limitations. Mardon et al teach that (see abstract and title) the alloy is used as a fuel rod sheath in a nuclear reactor, which is a component for a nuclear energy plant. Regarding that the composition is substantially uniform throughout, Mardon et al teach (see col. 3, lines 35-38) that the alloy has a homogenous structure.

Response to Arguments

9. Applicant's arguments filed 24 July 2003 have been fully considered but they are not persuasive. Applicant argued that:

a. Mardon et al do not disclose a cladding;

b. Mardon et al do not disclose 0.65-0.85 wt% Sn;

c. Nomoto et al do not meet the presently claimed range of Nb and teach broad ranges of other elements;

d. Anada et al do not meet the presently claimed range of Nb and teach broad ranges of other elements; and,

e. Isobe et al do not meet the presently claimed range of Nb and teach broad ranges of other elements.

In response to Applicant's first and second arguments, though Mardon et al teach an alloy that is used in a duplex cladding tube, the requirement that the alloy be a cladding tube and that the cladding tube be made totally of the claimed alloy do not appear in the claims. In fact, the claims include such duplex cladding tubes, particularly in claims 22 and 25. The only requirement of the claims is a cladding tube comprising the alloy, thus leaving the whole of the cladding tube open to include multiple layers of differing compositions. Though Mardon et al teach adjacent ranges with coinciding end points for the ranges of Sn and Nb, such disclosures have been held to be anticipatory in nature. See MPEP 2131.03.

In response to Applicant's third, fourth and fifth arguments, an overlapping range (such as the overlapping range of Nb taught by Nomoto et al) have been held to be anticipatory in nature, and thus supported in an obviousness rejection without motivation. See MPEP 2131.03. With respect to the broad ranges disclosed by Nomoto et al, Anada et al and Isobe et al, it has been held that when the prior art discloses broad ranges, and the prior art provides for the functions of those elements, a prima facie case of obviousness has been established. See MPEP 2144.05. II. Such a case of obviousness can be overcome by a showing of unexpected results within the narrow claimed range(s). However, Applicant's assertion in the specification of unexpected results does not prove that the results exist. Conclusory statements are not probative unless supported by facts. See Ex Parte Gray 10 USPQ 2d 1922 (BPAI

1989); In re deBlauwe 222 uSPQ 191, 196 (Fed. Cir. 1984); In re D'Ancicco 172 USPQ 241 (CCPA 1972); In re Grunwell 203 USPQ 1055 (CCPA 1979); Meitzner v. Mindick 193 USPQ 17; In re Brandstandter 179 USPQ 286, 294 (CCPA 1973); In re Lindner 173 USPQ 356; and In re Smith 74 USPQ 207. In the present case, Applicant's have not shown through use of comparison data that the presently claimed invention produces the asserted unexpected results.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 571-272-1244. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700